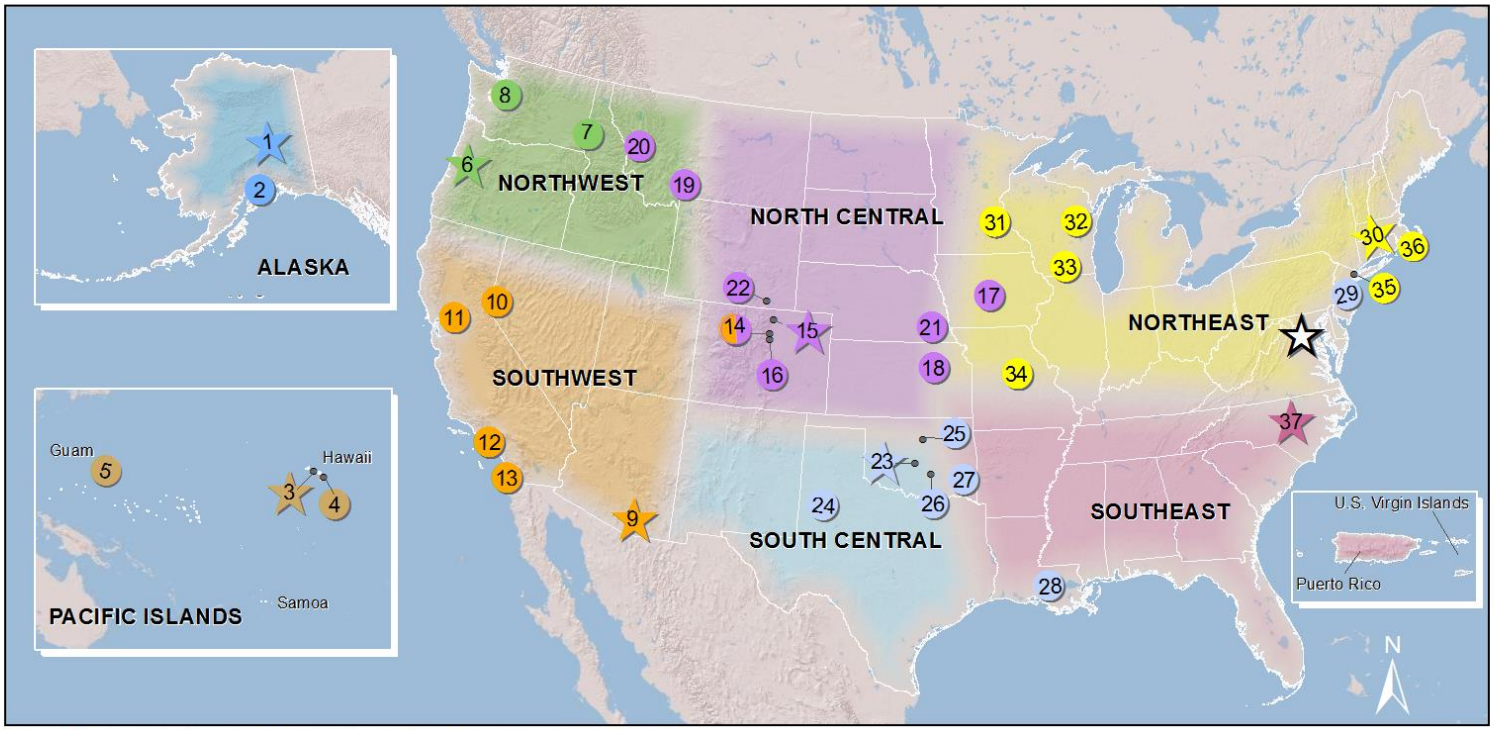
Data Management at the National Climate Change and Wildlife Science Center and the DOI Climate Science Centers

Emily Fort, USGS NCCWSC

September 2013

U.S. Department of the Interior
U.S. Geological Survey

CDI Webinar Series 2013



Base from ESRI, 2009, Albers Equal Area Conic Projection, North American Datum of 1983

EXPLANATION

National Climate Change and Wildlife Science Center

CSC Lead Institutions

CSC Institutions

Alaska CSC
1. University of Alaska - Fairbanks
2. University of Alaska - Anchorage

Pacific Islands CSC
3. University of Hawaii at Manoa
4. University of Hawaii at Hilo
5. University of Guam

Northwest CSC
6. Oregon State University
7. University of Idaho
8. University of Washington

Southwest CSC
9. University of Arizona
10. Desert Research Institute (Nevada)
11. University of California - Davis
12. University of California - Los Angeles
13. Scripps Institute of Oceanography
14. University of Colorado

North Central CSC
14. University of Colorado
15. Colorado State University
16. Colorado School of Mines
17. Iowa State University
18. Kansas State University
19. Montana State University
20. University of Montana
21. University of Nebraska - Lincoln
22. University of Wyoming

South Central CSC
23. University of Oklahoma
24. Texas Tech University
25. Oklahoma State University
26. Chickasaw Nation
27. Choctaw Nation of Oklahoma
28. Louisiana State University
29. NOAA Geophysical Fluid Dynamics Laboratory

Northeast CSC
30. University of Massachusetts Amherst
31. University of Minnesota
32. College of Menominee Nation
33. University of Wisconsin - Madison
34. University of Missouri Columbia
35. Columbia University
36. Marine Biological Laboratory

Southeast CSC
37. North Carolina State University

Challenges

- **Need to know what we are doing and where across the network**
- **Need to provide some basic capabilities and consistency for the NCCWSC and the CSCs**
- **Ensure data policies are enforced**
- **Provide access for university + federal scientists**
- **Fund ~100 projects each year**
- **Recognize reality that we are a new and growing program with a small staff**

Opportunities

- **Blank slate**
- **Government policy**
- **Supportive management**
- **Recognition of importance of tools and data management**
- **Extensive capabilities at USGS, other federal agencies, and at the universities**

Approach

- Don’t build another stove pipe
- Provide support to CSCs – both tools and people (data stewards for each CSC)
- Develop data policies
- Link projects to data and products
- Use standards and web services
- Identify integration opportunities
- Develop core capabilities that our partners can link to, integrate, reimagine

Data Policies

- All project products (data, models, etc.) will be shared (unless there is a good reason not to)
- Sharing happens when the project is complete
- Data management plans are required and should follow the developed template
- Common standards should be used
- Metadata must be provided

https://nccwsc.usgs.gov/content/data-policies-and-guidance

Data Management Plan Template

- **Organized by inputs and outputs**
- **For inputs, ask about new collections and use of existing data**

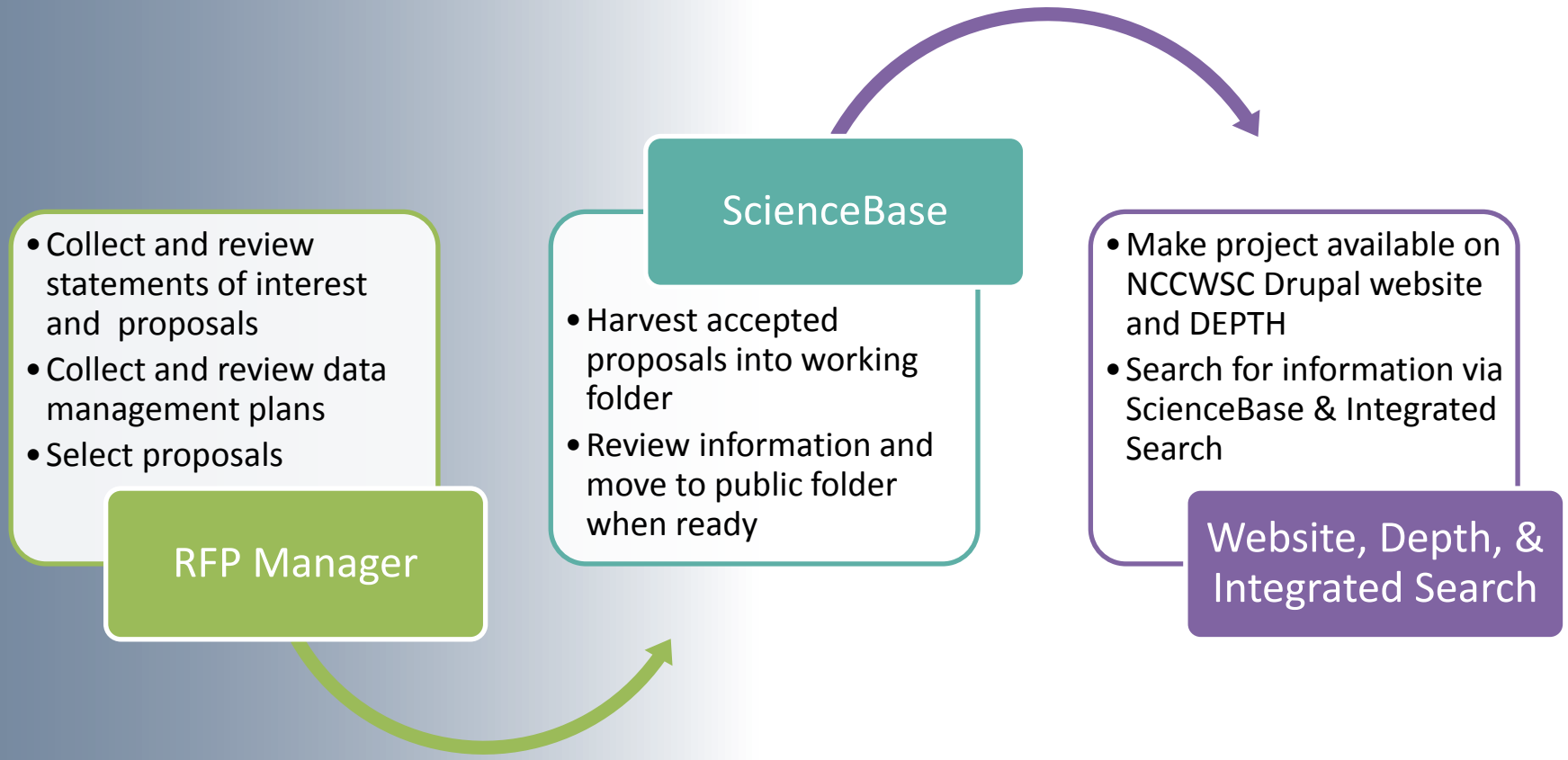
1	[Name of Collection]
Description:	Describe the information that v landscape, etc.) of the data. Inc
Format:	Identify the formats in which th
Quality Checks:	Specify the procedures used to and an assessment of usability.
Source:	Identify the source for the data
Data Processing & Scientific Workflows:	Describe any data processing st manipulate the data, as approp
Backup & Storage:	Describe the approach for back project during the project.
Volume Estimate:	Estimate the volume of inform
Access & Sharing:	Prior to the completion of the p information/products and wha
Restrictions:	Identify any limitations on acce license restrictions, etc.) and pr documentation describing limit
Fees:	Identify any fees associated wit
Citation:	Provide citation for data produ

1	[Name of Output]
Description:	Describe the data output.
Data Management Resources:	Describe the proposal resources allocated for data management activities for the new data collected as a level of effort, total dollars allocated, or as a percentage of the total project's cost. Resources could include people's time or proposal funding.
Format:	Identify the formats in which the data will be generated, maintained, and made available.
Data Processing & Scientific Workflows:	Describe data processing steps or provide a scientific workflow you plan to use to manipulate the data, as appropriate.
Quality Checks:	Specify the procedures for ensuring data quality during the project.
Metadata:	Identify the metadata standard that will be used to describe the data and products (FGDC, ISO, EML, etc.)
Volume Estimate:	Estimate the volume of information generated: megabyte (MB), GB, TB, or PB.
Backup & Storage:	Describe the approach for backup and storage of the information associated with the research project during the project.
Repository for Data:	In addition to the NCCWSC repository (ScienceBase), identify any other repositories where you plan to share your data.
Access & Sharing:	Prior to the completion of the project, specify who should have access to project information/products and what type of access (Public, Read, Write, No Access).
Exclusive Use:	Project data and associated products should be available publically at the end of the project. If a request to limit access for a period of time after project completion is needed, please identify the length of time and the reason for the extension. (Request cannot be more than two years.)
Restrictions:	Identify any limitations on access or reuse (e.g., sensitive data, restricted data, software with license restrictions, etc.) and provide justification for restriction. Provide citation or documentation describing limitations if due to policies or legal reasons.
Citation:	Specify how the project's data should be cited.
Digital Object Identifier (DOI)/Link:	Provide a digital object identifier (DOI)/link to the project when available publically.
Contact:	Provide a point(s) of contact if questions arise related to the data and associated products (name, email, and phone number).

Role of Data Steward

- **For each proposal, the proposal data management plan (DMP) is reviewed and comments are provided**
- **For funded proposals, a data steward works with the research team to complete the full DMP and answer any questions**
- **At project completion, the data steward works with the research team to transfer the products to the NCCWSC repository - ScienceBase**

Steps Along the Way



ScienceBase Project Record

Note
- Tags
- Communities
- Related items

Communities → National Climate Change and Wildlife Science Center → Northwest CSC → ... → Science Projects → **Climate Change Threats to Fish Habitat Connectivity: Growth and Predation** Manage

Provenance

Catalog Item:
Created by: hpadgett@usgs.gov on Wed Jul 18 11:40:04 MDT 2012
Last Updated by: madeline_steele@fws.gov on Wed Aug 28 10:11:46 MDT 2013

Tags

Topics:
2011
CSC
Climate Change
Habitat Connectivity
Northwest CSC
All tags...

Categories:
Data
Project

Types:
Downloadable
Map Service
OGC WFS Layer
OGC WMS Layer
Shapefile

View JSON ATOM ISO XML

An interdisciplinary U.S. Geological Survey (USGS) team has been working with local stakeholders in the Methow River (a tributary of the Columbia River) in arid eastern Washington State to develop decision support tools with which to evaluate possible climate change effects on natural resources, human economies and Native American cultural values. A stakeholders' workshop was held, which was attended by local politicians; federal, state and NGO resource managers; ranchers/farmers and Tribal representatives. Products from the workshop included stakeholder-defined goals for adapting to climate change. An important aspect of adaptation of aquatic resources in the Methow Basin is the role of habitat connectivity on the ability of native fishes to obtain food. Native fishes participate in feeding both as predators and as prey. With funds from the Great Northern LCC and the Northwest Climate Science Center (NW CSC), we will examine the influence of temperature, habitat availability, and flow under normal conditions and under climate change scenarios to simulate growth and consumption by fish and estimate the potential impact of predation on juvenile ESA-listed salmon. Specific tasks to be completed are: (1) determine if large bodied fish (bull trout, cutthroat trout and mountain whitefish) feeding in the mainstem Columbia River experience increased growth, which increases their predation on juvenile salmon in the Methow River; (2) develop parameters for bioenergetics models for bull trout and mountain whitefish to predict their growth under predicted climate change scenarios; and (3) determine current and potentially available side-channel connectivity, which provides rearing areas and refugia from predation for juvenile fish, in the mainstem Methow River. Thus far, we have (1) collected otoliths from mountain whitefish (our surrogate, non-ESA listed, large-body predator); (2) validated bioenergetics parameters for bull trout; and (3) completed a preliminary on-the-ground assessment of side channels in the Methow. With NW CSC funds we will model possible effects of climate change on fish habitat by completing the side channel assessment and combining that with existing tributary and mainstem models that predict flow under several climate change scenarios. These predicted changes will be run through an existing fish habitat decision support system to predict changes in habitat.

Read more...

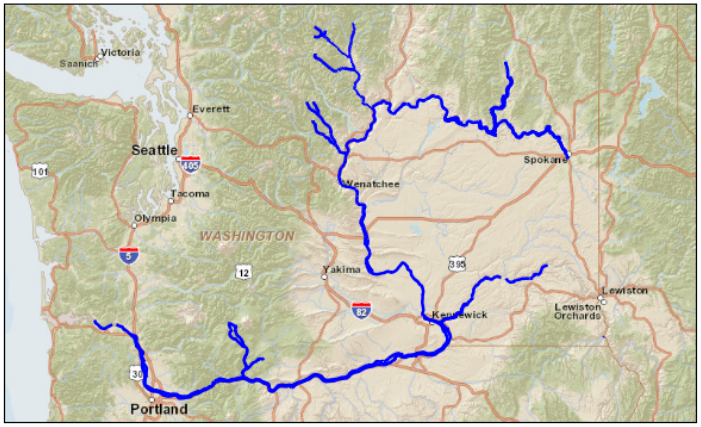
Original Metadata:

- columbia.shp.xml
- Entiat.shp.xml

Principal Investigator: Patrick J Connolly
Co-Investigator: Matthew G Mesa, Jill M Hardiman, James R Hatten, Alec G Maule
Cooperator/Partner: Michael Newsome, Jennifer Bountry, Michelle Schmidt, Karen Jenni, Colden Baxter, Lee Hatcher

Start Date: 2010
End Date: 2012

Interactive Mapper - Open in Google Earth (KML) - Advanced Services



Communities

LC MAP - Landscape Conservation Management and Analysis Portal
National Climate Change and Wildlife Science Center
North Pacific Landscape Conservation Cooperative
Northwest CSC

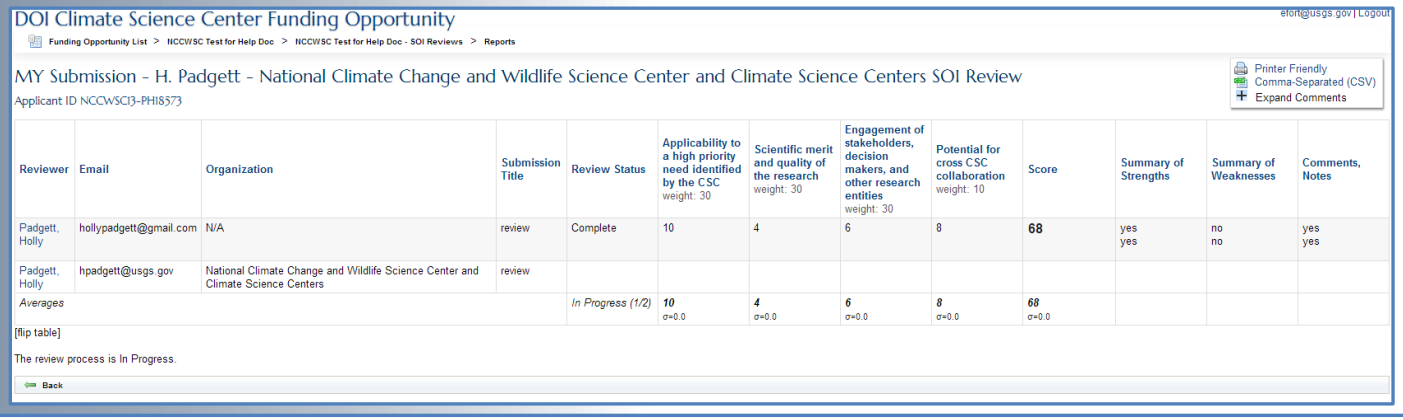
Related Items

Parent Item: Science Projects
Child Items: (5) :
- Approved DataSets
- Approved Products
- BASIS
- Other (Approved for Public)
- Working (Restricted Access)

Other Associated Items:
Associate an Item

RFP Manager

- **Needed a way to collect proposal information and conduct peer review**
- **Ensures consistency in process and compliance with policies (including DMP)**



DOI Climate Science Center Funding Opportunity

efort@usgs.gov | Logout

Funding Opportunity List > NCCWSC Test for Help Doc > NCCWSC Test for Help Doc - SOI Reviews > Reports

MY Submission - H. Padgett - National Climate Change and Wildlife Science Center and Climate Science Centers SOI Review

Applicant ID NCCWSC13-PH18573

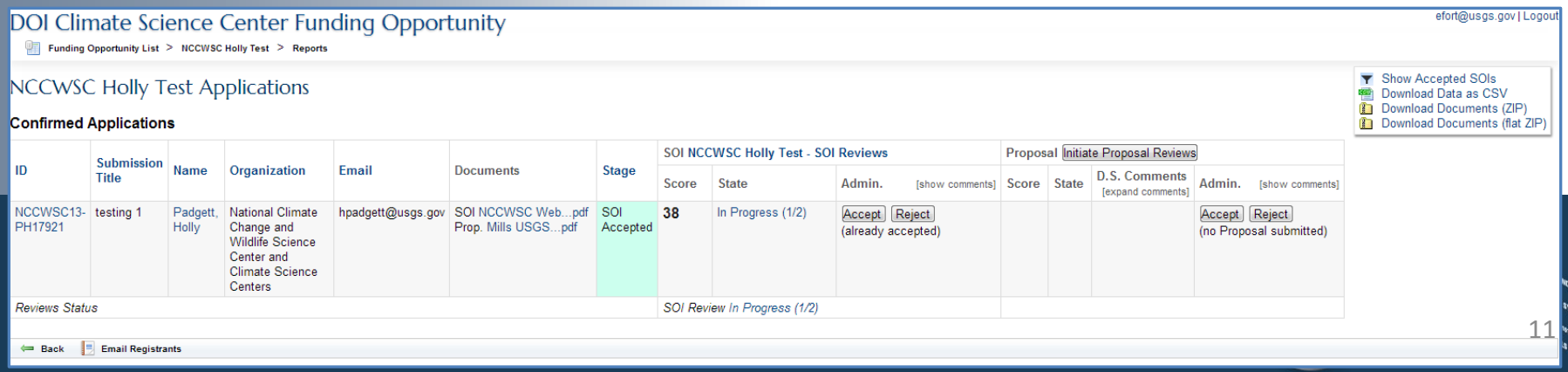
Printer Friendly
Comma-Separated (CSV)
Expand Comments

Reviewer	Email	Organization	Submission Title	Review Status	Applicability to a high priority need identified by the CSC weight: 30	Scientific merit and quality of the research weight: 30	Engagement of stakeholders, decision makers, and other research entities weight: 30	Potential for cross CSC collaboration weight: 10	Score	Summary of Strengths	Summary of Weaknesses	Comments, Notes
Padgett, Holly	hollypadgett@gmail.com	N/A	review	Complete	10	4	6	8	68	yes yes	no no	yes yes
Padgett, Holly	hpadgett@usgs.gov	National Climate Change and Wildlife Science Center and Climate Science Centers	review									
Averages				*In Progress (1/2)*	***10*** σ=0.0	***4*** σ=0.0	***6*** σ=0.0	***8*** σ=0.0	***68*** σ=0.0			

[flip table]

The review process is In Progress.

Back



DOI Climate Science Center Funding Opportunity

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Funding Opportunity List > NCCWSC Holly Test > Reports

NCCWSC Holly Test Applications

Show Accepted SOIs
Download Data as CSV
Download Documents (ZIP)
Download Documents (flat ZIP)

Confirmed Applications

ID	Submission Title	Name	Organization	Email	Documents	Stage	SOI NCCWSC Holly Test - SOI Reviews			Proposal Initiate Proposal Reviews			
							Score	State	Admin. [show comments]	Score	State	D.S. Comments [expand comments]	Admin. [show comments]
NCCWSC13-PH17921	testing 1	Padgett, Holly	National Climate Change and Wildlife Science Center and Climate Science Centers	hpadgett@usgs.gov	SOI NCCWSC Web...pdf Prop. Mills USGS...pdf	SOI Accepted	**38**	In Progress (1/2)	Accept Reject (already accepted)				Accept Reject (no Proposal submitted)
Reviews Status							*SOI Review In Progress (1/2)*						

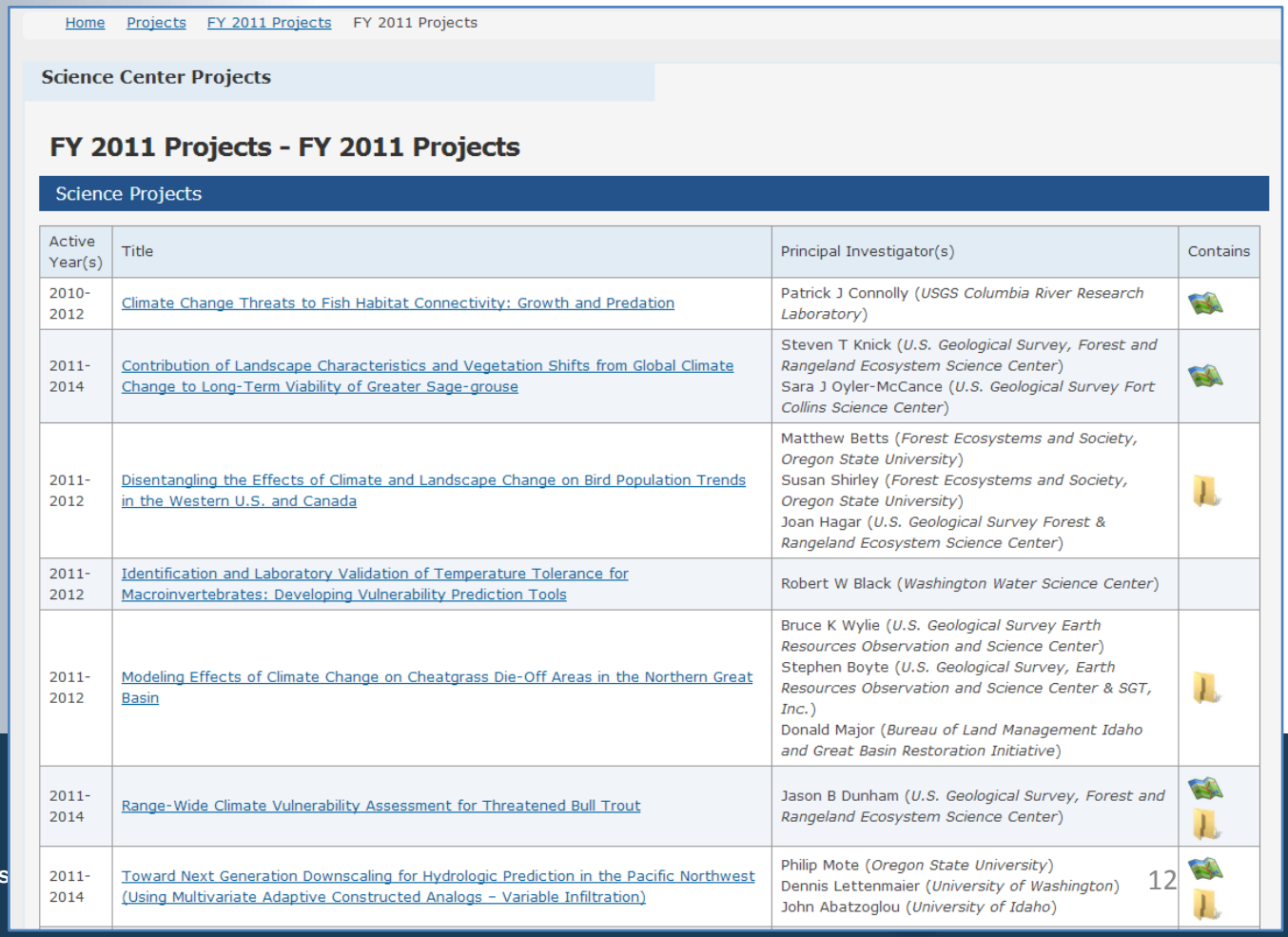
Back Email Registrants

NCCWSC Website Project Pages - Summary

Powered by ScienceBase

- Use ScienceBase's web services and styled by our Drupal content management system
- Organized by FY and CSC
- Icon to indicate data/map

CSC Projects:
https://nccwsc.usgs.gov/project-pages/4f4e476ae4b07f02db47e13b



Home Projects FY 2011 Projects FY 2011 Projects

Science Center Projects

FY 2011 Projects - FY 2011 Projects

Science Projects

Active Year(s)	Title	Principal Investigator(s)	Contains
2010-2012	Climate Change Threats to Fish Habitat Connectivity: Growth and Predation	Patrick J Connolly (*USGS Columbia River Research Laboratory*)	
2011-2014	Contribution of Landscape Characteristics and Vegetation Shifts from Global Climate Change to Long-Term Viability of Greater Sage-grouse	Steven T Knick (*U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center*) Sara J Oyler-McCance (*U.S. Geological Survey Fort Collins Science Center*)	
2011-2012	Disentangling the Effects of Climate and Landscape Change on Bird Population Trends in the Western U.S. and Canada	Matthew Betts (*Forest Ecosystems and Society, Oregon State University*) Susan Shirley (*Forest Ecosystems and Society, Oregon State University*) Joan Hagar (*U.S. Geological Survey Forest & Rangeland Ecosystem Science Center*)	
2011-2012	Identification and Laboratory Validation of Temperature Tolerance for Macroinvertebrates: Developing Vulnerability Prediction Tools	Robert W Black (*Washington Water Science Center*)	
2011-2012	Modeling Effects of Climate Change on Cheatgrass Die-Off Areas in the Northern Great Basin	Bruce K Wylie (*U.S. Geological Survey Earth Resources Observation and Science Center*) Stephen Boyte (*U.S. Geological Survey, Earth Resources Observation and Science Center & SGT, Inc.*) Donald Major (*Bureau of Land Management Idaho and Great Basin Restoration Initiative*)	
2011-2014	Range-Wide Climate Vulnerability Assessment for Threatened Bull Trout	Jason B Dunham (*U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center*)	
2011-2014	Toward Next Generation Downscaling for Hydrologic Prediction in the Pacific Northwest (Using Multivariate Adaptive Constructed Analogs – Variable Infiltration)	Philip Mote (*Oregon State University*) Dennis Lettenmaier (*University of Washington*) John Abatzoglou (*University of Idaho*)	

NCCWSC Website Project Pages - Detail

Powered by ScienceBase

Example URL:
https://nccwsc.usgs.gov/display-project/5006c1e5e4b0abf7ce733f3b/5006f498e4b0abf7ce733f92

Modeling Effects of Climate Change on Cheatgrass Die-Off Areas in the Northern Great Basin

Project Information

Principal Investigator(s):
Bruce K Wylie (*U.S. Geological Survey Earth Resources Observation and Science Center*)
Stephen Boyte (*U.S. Geological Survey, Earth Resources Observation and Science Center & SGT, Inc.*)
Donald Major (*Bureau of Land Management Idaho and Great Basin Restoration Initiative*)

Start Date: October 2011

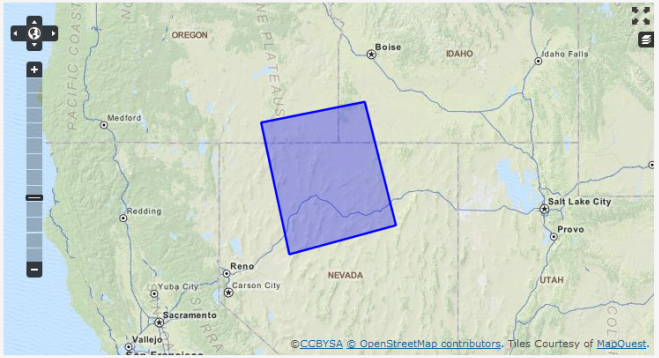
End Date: September 2012

Project Status: Completed

Tags: Climate Change, Cheatgrass, Great Basin, CSC, Northwest CSC, 2011, Science Project

CSC/NCCWSC Affliation: Northwest CSC

Fiscal Year: FY 2011 Projects



Summary

Cheatgrass (*Bromus tectorum*) is a dominant invasive species across large areas of the Great Basin. In recent years, the die-off of cheatgrass has been observed across relatively large areas in the region with an estimated 500,000 acres of affected area reported in the general vicinity of Winnemucca, NV. However, actual extent of the phenomenon could be considerably larger as die-offs are occurring in smaller areas across portions of the Northern Great Basin. As part of the Bureau of Land Management's (BLM) Integrated Cheatgrass Dieoff Project, U.S. Geological Survey (USGS) Earth Resources Observation Systems (EROS) Center scientists in collaboration with Don Major, BLM Landscape Ecologist, have developed a cheatgrass performance model that incorporates seasonally integrated normalized difference vegetation index (NDVI) from the enhanced Moderate Resolution Imaging Spectroradiometer (eMODIS) along with environmental attributes. Based on the die-off areas in the area surrounding Winnemucca and in the Owyhee Uplands, we propose to predict areas of potential cheatgrass die-offs under future climate projections and make climate-based forecasts of these die-off areas.

Products & Data

Cheatgrass Dieoff Time-series Dynamics (2000-2010)
Land Cover Applications and Global Change (External URL)

Cheatgrass dieoff in Northern Great Basin Final Report
Cheatgrass dieoff in Northern Great Basin FINAL REPORT 09JUL12.pdf (Download)

Identifying cheatgrass dieoff in the Great Basin by integrating eMODIS NDVI data with ecological models
Society for Range Management (External URL)

Mapping interannual cheatgrass production and dieoff in the Great Basin using remote sensing data and ecological models
YouTube Video (External URL)

ReadMe file to accompany the report "Mapping Cheatgrass Dieoff in the Northern Great Basin using Ecosystem Performance Modeling"
ReadMe.docx (Download)

Data
- Cheatgrass Percent Cover Maps
- Cheatgrass Dieoffs

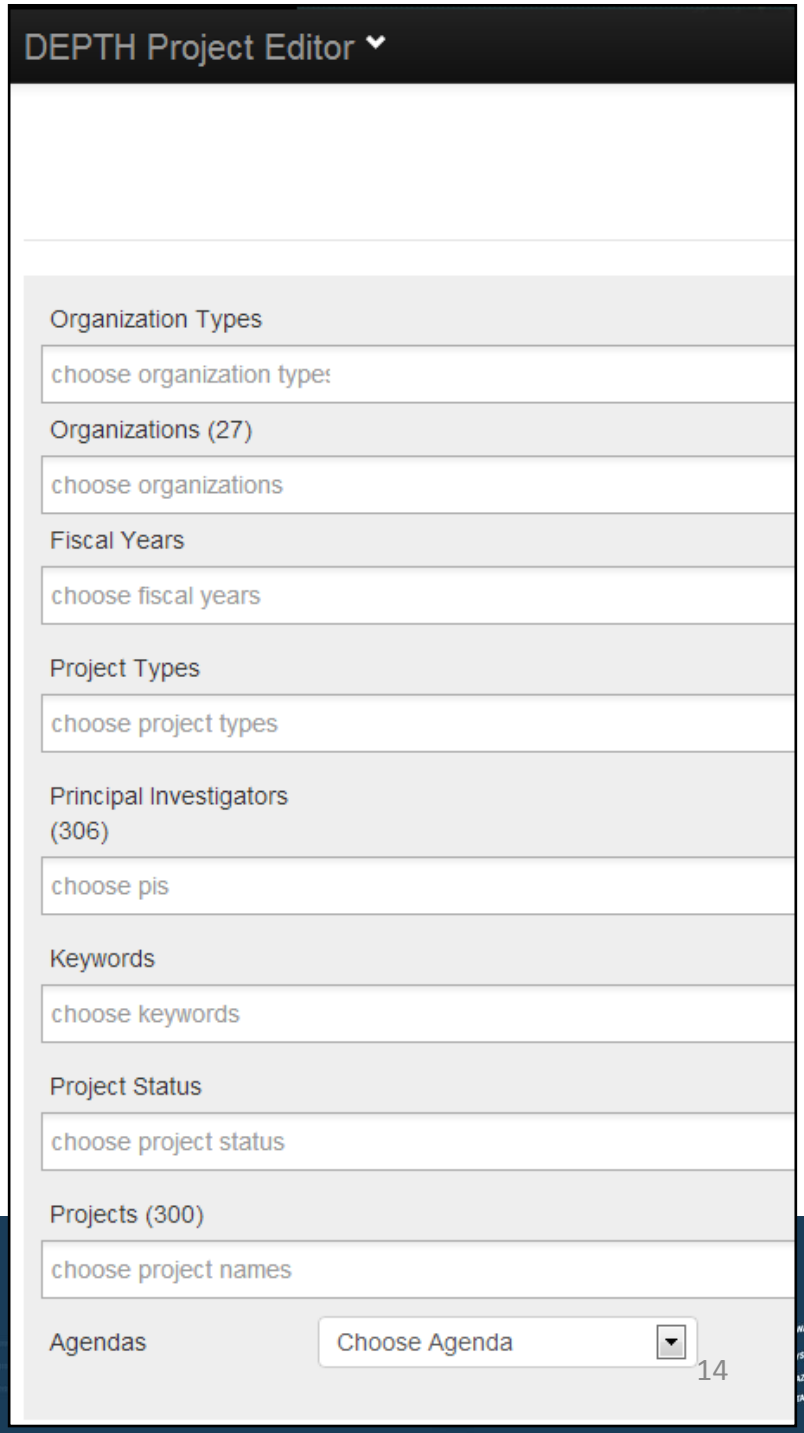
Maps
- Cheatgrass PercentCover
- Cheatgrass Dieoffs

ScienceBase Url: https://www.sciencebase.gov/catalog/item/5006f498e4b0abf7ce733f92

DEPTH

- **Project-centric view of ScienceBase information**
- **Searchable by many filters, including science agenda**
- **Intuitive entry of new records**
- **Assists with CSC regional coordination**

Example:
https://my.usgs.gov/depth/#/viewProject/5006f498e4b0abf7ce733f92/csc

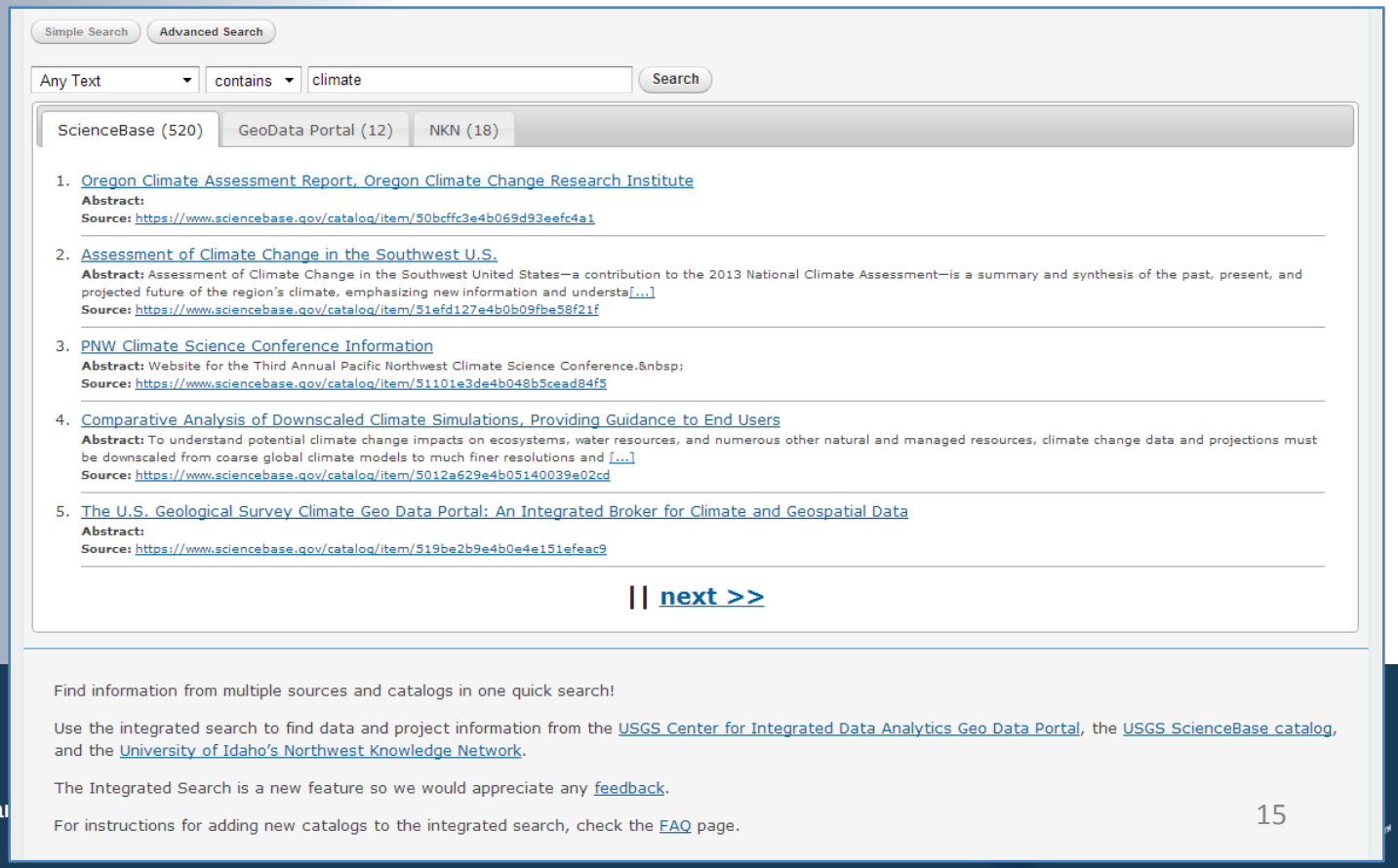


14

Integrated Search

- **Search multiple data repositories at the same time**
- **Uses common metadata standard**
- **Works by using csw (catalog service for the web)**
- **Give us feedback!**

https://nccwsc.usgs.gov/integrated_search



Where Do We Go From Here?

- Learn lessons from DMPs to improve guidance, clarify, walk line of getting the right amount of information at the proposal stage
- Identify areas for future collaboration and integration with partners and CSC members
- Develop additional tools and features as needed (and as resources allow)
- Add features (DOIs, data management plan editor, etc.)

Questions?

- **Contact Email:**
  - **Emily Fort: efort@usgs.gov**

- **Web URL: if applicable**
  - **https://nccwsc.usgs.gov/**